PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference	FOR FURTHER ACTION	See Form PCT/IPEA/416
P83302PC00/JRC		
International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/GB2004/000094	12.01.2004	13.01.2003
International Patent Classification (IPC) or national classification and IPC		
F16T1/34		
Applicant		
SPIRAX-SARCO LIMITED et al.		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
   a. ☒ *sent to the applicant and to the International Bureau)* a total of 1 sheets, as follows:
      ☒ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
      ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
   b. ☐ *(sent to the International Bureau only)* a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

☒	Box No. I	Basis of the opinion
☐	Box No. II	Priority
☐	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
☐	Box No. IV	Lack of unity of invention
☒	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
☐	Box No. VI	Certain documents cited
☒	Box No. VII	Certain defects in the international application
☐	Box No. VIII	Certain observations on the international application

Date of submission of the demand	Date of completion of this report
10.09.2004	18.04.2005
Name and mailing address of the international preliminary examining authority:	Authorized Officer
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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/GB2004/000094

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

   ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
   - ☐ international search (under Rules 12.3 and 23.1(b))
   - ☐ publication of the international application (under Rule 12.4)
   - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

Description, Pages	
1-13	as originally filed
Claims, Numbers	
1-25	as originally filed
Claims, Pages	
14	as amended (together with any statement) under Art. 19 PCT
Drawings, Sheets	
1/3-3/3	as originally filed

☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:
   - ☐ the description, pages
   - ☐ the claims, Nos.
   - ☐ the drawings, sheets/figs
   - ☐ the sequence listing *(specify)*:
   - ☐ any table(s) related to sequence listing *(specify)*:

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
   - ☐ the description, pages
   - ☐ the claims, Nos.
   - ☐ the drawings, sheets/figs
   - ☐ the sequence listing *(specify)*:
   - ☐ any table(s) related to sequence listing *(specify)*:

* *If item 4 applies, some or all of these sheets may be marked "superseded."*

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-25
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-25
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-25
	No:	Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Reference is made to the following document:
D1: US-A1-3037518

2. The document D1 is regarded as being the closest prior art to the subject-matter of claim 1, and shows (the references in parentheses applying to this document) a condensate trap comprising a vortex chamber (15), an inlet (14) and a single outlet (see column 2, line 10). The inlet is disposed to admit fluid into the chamber in a manner to promote a vortex flow of the fluid within the chamber, and the outlet comprises an axial aperture (16 or 17) located at an axial end of the chamber (see figure 1).

3. The subject-matter of claim 1 differs from this known condensate trap in that the inlet is provided within a tangential direction with regard to the longitudinal axis of the chamber.

4. The subject-matter of claim 1 is therefore new (Article 33(2) PCT).

5. The problem to be solved by the present invention may be regarded as to generate a low pressure region at the axial end of the chamber in order to respectively increase the discharge rate of condensate and reduce the discharge rate of vapour.

6. The solution to this problem proposed in claim 1 of the present application is neither known nor rendered obvious by the available prior art. The subject-matter of claim 1 is therefore considered as involving an inventive step (Article 33(3) PCT).

7. Claims 2-25 are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

Re Item VII

Certain defects in the international application

The wording of claims 22 and 25 refers to the description and the drawings and is thus in contradiction with the International Search and Preliminary Examination Guidelines (see chapter 5.10).

Claims

1. A condensate trap comprising a vortex chamber, an inlet and a single outlet, the inlet being disposed to admit fluid into the chamber in a tangential direction with respect to the longitudinal axis of the chamber so as to promote a rotational flow of the fluid in the chamber about the longitudinal axis, thereby to generate a low pressure region within the fluid, and the outlet comprising an escape aperture situated at an axial end of the chamber so as to open into the low pressure region in operation of the condensate trap.

2. A condensate trap as claimed in claim 1, wherein at least a portion of the vortex chamber is cylindrical.

3. A condensate trap as claimed in claim 1 or 2, wherein at least a portion of the vortex chamber is frusto conical.

4. A condensate trap as claimed in claims 2 and 3, wherein the cylindrical portion adjoins the wider diameter end of the frusto conical portion.

5. A condensate trap as claimed in claim 4, wherein the inlet opens into the cylindrical portion.

6. A condensate trap as claimed in claims 3 to 5, wherein the escape aperture is disposed at the narrower end of the frusto conical portion.

7. A condensate trap as claimed in any one of the preceding claims, wherein the escape aperture is situated on the longitudinal axis of the vortex chamber.